

# **Coastal and Marine Resources in the Caribbean: Local Co-management and Regional Knowledge Management**

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## **ABSTRACT**

Co-management of coastal and marine resources in the Caribbean appears advanced in comparison with other regions. This makes a comparative study of the causes and special characteristics of the region interesting. This is done, first, by briefly reviewing local-level community-based coastal resource management projects in select location in the Caribbean and elsewhere in the world, and, second, by discussing these from the macro-level point of view of knowledge management.

Assessment of local management practices is done from the point of view of community-based natural resource management (CBNRM), understood as management of natural resources under a detailed plan developed and agreed to by all concerned stakeholders. The approach is community-based in that the communities managing the resources have the legal rights, the local institutions, and the economic incentives to take substantial responsibility for sustained use of these resources. Under the natural resource management plan, communities become the primary implementers, assisted and monitored by technical and other services as located in the public sector.

The projects may be analysed within the larger context of knowledge management. Increasing amounts of knowledge on coastal and marine issues is accumulating in the region and elsewhere, while, at the same time, the number of stakeholders as well as the distance between these stakeholders is increasing. This calls for efforts to create means and contexts for managing this knowledge in a systematic way, for all stakeholders. The Community-Based Natural Resource Management Network (CBNRM Net, [www.cbnrm.net](http://www.cbnrm.net)), is presented as a model for how to management relevant knowledge.

Some implications of the two intertwined arguments regarding, first, practical experiences with co-management, and, second, management of such knowledge, for future directions of research is outlined.

**KEY WORDS:** Coastal and marine resources, co-management, knowledge management

## **Recursos Costeros y Marinos en el Caribe: Co-gerencia Local y Gerencia Regional de la Administración del Conocimiento**

Co-gerencia de los recursos costeros y marinos en el Caribe aparece avanzada en comparación con otras regiones. Este trabajo hace un estudio comparativo de las causas y de las características especiales de interes de la región.

Esto es hecho, primero, tratando prácticas de manejo al nivel-local en selectas localidades en el Caribe y a otra partes en el mundo, y segundo, discutiendo estas prácticas y experiencias desde el punto de vista del macro-nivel del la gerencia del conocimiento. La evaluación de las prácticas de gerencia locales se hace desde el punto de vista de la gerencia de recurso natural basado en la comunidad (CBNRM), entendido como la gerencia de recursos naturales bajo plan detallado se convirtió y convino por todos los usuarios interesados en el asunto. El acercamiento comunidad-se basa en que las comunidades que manejan los recursos tienen las derechos legales, las instituciones locales, y los incentivos económicos de tomar la responsabilidad substancial del uso sostenido de estos recursos. Bajo plan de la gerencia de recurso natural, las comunidades hacen los ejecutores primarios, asistidos y supervisados por servicios técnicos y otros según lo situado en el sector público. Primero, una comparación se hace entre los proyectos del Caribe en curso seleccionados y los proyectos internacionales, con seleccionar las características dominantes para la comparación y construir una matriz para la discusión. En segundo lugar, los proyectos se analizan dentro del contexto más grande de la gerencia del conocimiento. El aumento de cantidades de conocimiento en ediciones costeras y marinas está acumulando en la región, mientras que, en el mismo tiempo, el número de tenedores de apuestas así como la distancia entre estos tenedores de apuestas está aumentando. Esto llama para que los esfuerzos creen medios y los contextos para manejar este conocimiento de una manera sistemática, para todos los interesados en el recurso. La red de CBNRM - La red Comunidad-Basada de la gerencia de recurso natural ([www.cbnrm.net](http://www.cbnrm.net)), se presenta como modelo de cómo manejar este conocimiento. Finalmente, algunas implicaciones de las dos discusiones entreenlazadas entre ellas, la primera las prácticas experiencias con la co-gerencia, y, en segundo lugar, de la gerencia de tal conocimiento, porque de las direcciones futuras de la investigación se demarcan.

**PALABRAS CLAVES:** Recursos marinos y costeros, co-gerencia, local y regional

## INTRODUCTION

This paper takes on an outside position to projects and other applied activities in the area of coastal and marine resource management in the Caribbean. It does this both as regards the organization of applied activities, by focusing on a different type of outcome than that normally considered, namely new knowledge and management of such knowledge, by addressing specific aspects of the position of such activities in the large framework of the states in which they occur, and by suggesting how the impact of these activities can be furthered through networking them and through increased integration.

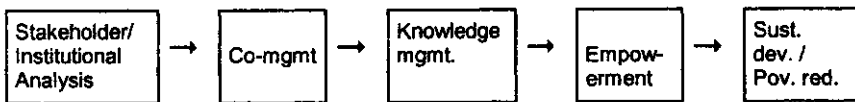
The analytical framework consists of: (a) institutions and stakeholders, (b) co-management and (c) knowledge management (KM). For a comparison between projects in the Caribbean and elsewhere, a key aspect the culture and society in question is selected, namely institutions, and compared across the projects. The outcome is used to construct a simple comparative project matrix.

comparative data. The case of the Community-Based Natural Resource Management Network (CBNRM Net) is presented, emphasizing how management of relevant CBNRM knowledge is organized and is implemented. The role of Information and Communication Technologies (ICTs) in making this agenda possible is presented.

In the discussion section, the implications of the twin and parallel arguments on a bird's eye view on project assessment and a call for increased emphasis on KM is drawn. These are argued to lie in the area of increased understanding of, and degrees of freedom for, empowerment and collective action. A possible role of ICTs, following from focusing on digital commons, is pursued. The pains and pleasures of placing co-management solidly within a broader and more inclusive approach to knowledge management are outlined.

### FRAMEWORK FOR ANALYSIS

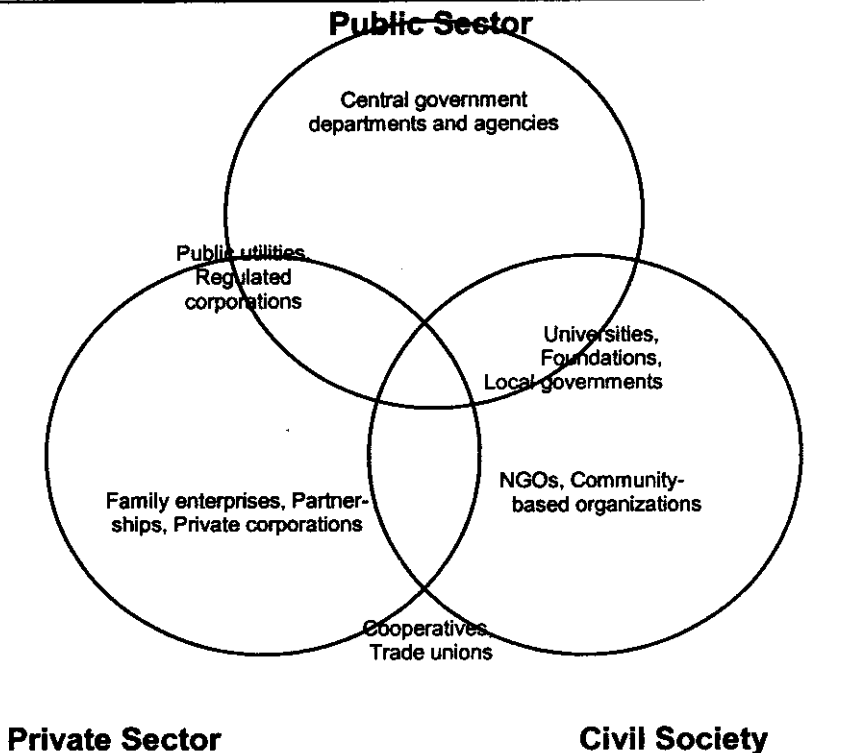
The framework for analysis connects co-management and knowledge management with certain analyses and outcomes (Figure 1). Each of the steps in this causal chain is understood as important conditions or inputs for arriving at the next step. In doing so, this model picks out some elements of the reality for the purpose of the argument in this paper, and leaves out other variables that may be equally important.



**Figure 1.** Causality chain connecting co-management and knowledge management

### Stakeholders and Institutions

Understanding an institution is not straightforward. A looser usage that fits the purpose of the present argument refers to the rule-bound and patterned nature of behaviour. At the level of the nation state an institution will primarily be used with reference to organizations, broadly understood. At the local level, an institution will be used also with reference to rules for behaviour (following the view as developed within institutional economics), and are important determinants of social organization, including collective action. Stakeholder analysis and institutional analysis are necessary tools for assessing the situation with regards to these aspects of a culture, or a local institution, to be done in connection with project preparation. Institutional analysis can also lead to institutional reform. In a given situation, one may find a number of organizations, as located and integrated within and across public sector, private sector and civil society (Figure 2).




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**Figure 2. Overview of categories organizations**

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### **Co-management**

Co-management is as a situation in which two or more stakeholders negotiate, define and guarantee, among themselves, a fair share of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources. Among several more specific interpretations of this general statement, co-management is here understood as a pluralist approach to managing natural resources, incorporating a variety of stakeholders in a variety of roles, generally towards the end goals of environmental conservation, sustainable use of natural resources and the equitable sharing of resource-related benefits and responsibilities (Borrini-Feyerabend, Farvar, Nguingiri and Ndangang 2000, cf. also Wilson, Degnbol and Nielsen 2003). The relationships between key stakeholders in a situation without and with co-management are fundamentally different.

### **Knowledge Management**

Knowledge management represents a radically new way of understanding the experiences and learning accumulated in the course of implementing project, and in two ways. First, while information is understood as data arranged

in meaningful patterns, knowledge is information placed in a cultural and social context (Soefsted and Kashwan In Press). Second, ICTs provides new opportunities. Thus, knowledge is recognized as having three dimensions: sharing knowledge, the reach of ICTs, which gives a new dimension to sharing knowledge, and explicating knowledge, which is concerned with capturing, organizing and disseminating it (Soefsted and Kashwan In Press). Furthermore, the view on knowledge management presented here covers also production of new knowledge.

## RESULTS

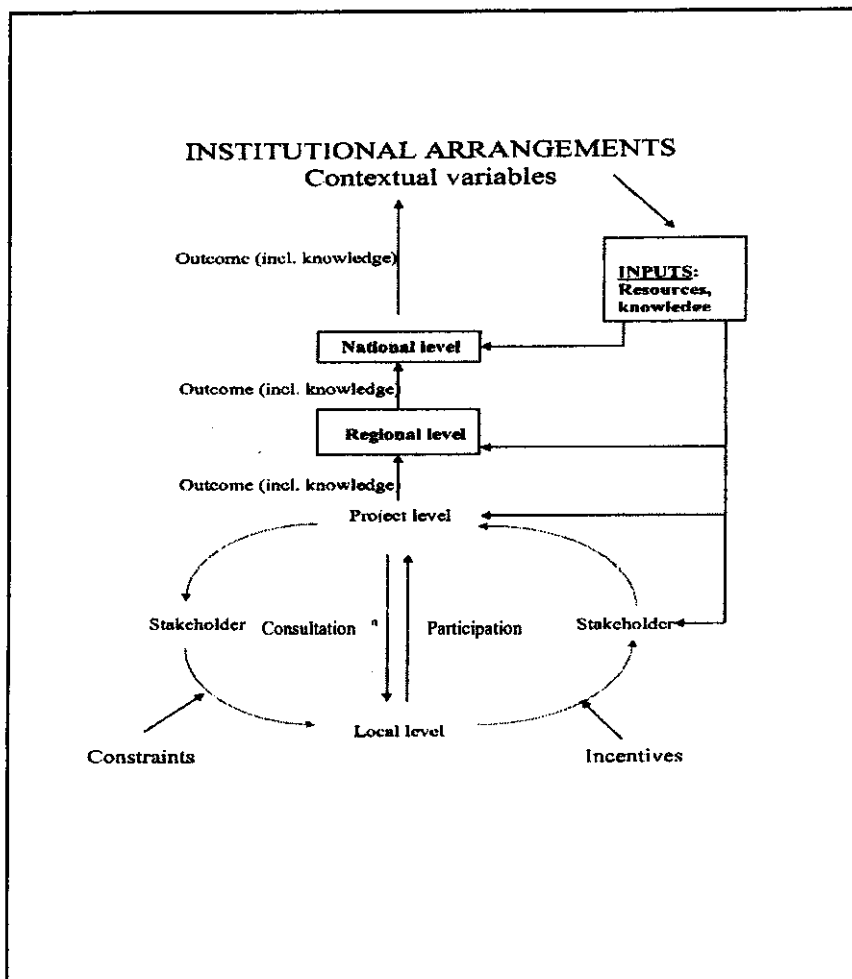
Of a large number of potential characteristics or variables that are recognized in the international literature as having an impact on the success of co-management, and, as presented in the analytical framework above, the presence and characteristics of institutions will be given attention. Tools for institutional analysis is available. The approach followed here is, however, less formal and more intuitive. Some characteristics of institutions in marine and coastal resource management in the Caribbean will be juxtaposed with the situation in projects and activities in Bangladesh and Ghana that I have worked on. The data are summarized in Figure 3.

### Caribbean

The characteristics of, and conditions for, co-management of coastal and marine resources in the Caribbean have been extensively researched (Pomeroy, McConney and Mahon 2003). A number of case studies that area reviewed in this publication are summarized with regard to the characteristic of institutions. Pomeroy, McConney and Mahon 2003 refer to "institutional arrangements analysis", which covers "contextual variables" (characteristics of key attributes of the resources and resource users) and "management institutional arrangements" (rights and rules). This appears to compare well with the way in which institutions is understood above, and would seem to cover both the organizational and rule/value aspects of institutions outlined above. Furthermore, the authors identify causal relationships between the contextual variables, the institutional arrangements and the resulting transactional outcomes.

Several of the cases reviewed by Pomeroy, McConney and Mahon (2003) refer to the importance of suitable institutional arrangements for long-term success. Many employ concepts that are overlapping and that have more or less in common with the present concern with institutions. Thus several are concerned with the conditions and characteristics of participation and participatory approaches, as well as with the conditions for collective action. Generally speaking they conclude that there is a lot to be desired as far as participatory approaches are concerned. In the absence of organized forms of fishing activities, there are efforts at organizing fisherfolk, and some case studies focus on this. It is clear that, given the lacunae of organizations and understanding of them, there is a strong public sector involvement which would have to be balanced by conscious efforts at, for example, leadership training to build local organizational capacity. One source reports a low degree of social integration, together with the absence of community cohesion and cooperative institutions, at the community level. This clearly has implications for the level of collective

action. Another source reviewed existing social institutions for co-management, and argues that significant advances in the creation of social institutions that are favourable to the establishment and sustainability of co-management systems. At the same time the existing resource user organizations have structural and operational weaknesses. In an analysis of six projects, a number of variables that have more or less in common with institutions are presented. These conditions for co-management, that largely is assessed as missing, include: cooperation, leadership, trust and mutual respect, and organizational capacity.



**Figure 3.** Flow chart of a generic knowledge and co-managed project

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**Bangladesh**

The Bangladesh countryside, largely a traditional rural agricultural culture and economic system, has functioning and complementary organizations and institutions on several local levels. In the case of the inland traditional fishing subsistence practice, there are clear riparian rights, clearly defined stakeholders, clearly defined boundaries and local leadership, to mention some. The organizational capacity across religions, subsistence practices, castes, baris (village subunits), and villages are not great however. A successive series of World Bank fisheries projects have aimed to address these issues, with mixed success. For the Fourth Fisheries Project (presently under implementation) I devised a community-based natural resource management model (termed a Collaborative Management Model (CMM)) (World Bank 1999), which starts by setting out the rights and obligations of the key stakeholders categories, as located in public sector, private sector and civil society, before proceeding to outlining interaction and collaboration between. A major problem is the fact that the public sector is extremely weak, if at all present at the local level. The implementing agency, the Dept. of Fisheries, has extension staff that is doing an impressive job, but are too few to cover the whole country well. The CMM, in effect a co-management model, has problems in functioning smoothly in this situation. Given the absence of the public sector, the playing field has been left open for other stakeholders, and non-governmental organizations (NGOs) have found it opportune to take on many of the responsibilities that traditionally would have been set aside for the public sector. Staff and consultants working on the Fourth Fisheries Project, while being aware of these developments, has nonetheless made conscious efforts at using the project as a means towards increasing the public sector presence in rural areas. At the same time there has also been effort along the opposite track, namely to cement the situation and argue that civil society and NGOs should continue their work (Soefsted 1998). Another development that address the connected issue of strong institutions and a weak decentralized or absent public sector, is the fact that fisheries projects increasingly are conceptualized within larger contexts. Examples include biodiversity conservation, coastal zone management and pollution management.

**Ghana**

Ghana is renown for a very strong traditional sector that includes more or less well-functioning institutions. This is the chieftaincy system. It, and its officeholders, the Chiefs have, in theory, a major say in life in general, including along the whole coastal zone. The reach of the Chiefs extends to the two interrelated issues of tenurial arrangement and the social organization of production, which covers also the utilization of coastal and marine resources. There is in Ghana a growing tension between the traditional Chieftaincy system and the modernizing state. While relationships in traditional society are based on family membership, inherited status and traditional beliefs, in modern society they are a consequence of emphasis on achieved status, formalized interaction and bureaucratic organization. The World Bank's sector work on integrated coastal zone management in Ghana aimed at stakeholder analysis and institutional analysis of all stakeholders, as well as any and all usage of

resources in the coastal zone (World Bank 1997). I worked on the potential role of the chieftaincy system and the Chiefs in contributing to addressing the social and environmental issues recognized in the coastal zone (Soeftestad 1996). As it soon became clear, the Chiefs have lost a lot of their power. More importantly, a mechanism for integrating the traditional and modern sector has not been found. Chiefs cannot operate on the local political arena, and their power and influence is today largely restricted to religion. At the same time fishing is a relatively new occupation in Ghana, and does not have many institutions of its own, including a lack of resource boundaries and clearly defined membership.

### A Project Matrix

Whereas a lot of the literature on co-management discusses details of projects, the focus is on co-management and not on the project *per se*. A more specific focus on the project, in effect, using it as the unit of analysis, would be of interest. Depending upon how such a comparative approach is developed, it could provide important insights into how projects perform, and why they perform the way they do, within countries and regions as well as between countries and regions. In order for this to work, it is necessary to analytically separate the project from its institutional context. A search for comparable data will have to extend beyond the project itself, and cover both the nation-state and the local level. That is, the project has to be viewed apart from the overarching nation-state context within which it operates, and also apart from the local level situation in which it is being employed. This approach provides for a matrix in three parts. At first glance it would seem that quite a bit of the detailed analytical content provided in the analytical literature on co-management can be adapted to the present project analysis (McConney 1999, Pomeroy, McConney and Mahon 2003). Likewise, understanding projects, in the operational and processual aspects, as networks means that analytical variables developed for networks also apply to projects (Soeftestad and Kashwan In Press). The criteria for which variables to select to a large extent have to follow from the realization that projects are processes, and that development cooperation is fast changing. Some variables are found on two or three levels. The proposed matrix is rudimentary and does not, at this point in time, make any effort to quantify and otherwise operationalise the selected variables (Table 1).



**Table 1.** Matrix of comparable variables for projects, including for their macro-contexts and place of implementation

Level	Variable	Comments
Nation-state	Collective action	
	Communication	
	Coordination	
	Corruption	
	Social organization	
	Legislation	
	Support	
	Transparency	
Project	Communication	
	Conflict management	
	Conflict management	
	Cooperation	
	Coordinating body	
	Coordination	
	Goals	
	Management approaches	
	Means	
Community	Objectives	
	Organizational capacity	
	Benefits	
	Collective action	
	Communication	
	Cooperation	
	Coordination	
	Empowerment	
	Group cohesion	
	Incentive structure	
	Leadership	
	Needs	
	Property rights	
	Resource boundaries	
	Social organization	
	Trust and mutual respect	

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## THE COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT NETWORK

The Community-Based Natural Resource Management Network (CBNRM Net) is a Community of Practice (CoP) for the many people around the world that work on CBNRM, be it as practitioners, researchers or managers (Soeftestad 2002). CBNRM Net started as a World Bank activity in 1997. There are presently around 500 members that live and work in around 100 countries (Soeftestad and Kashwan In press). While a traditional CoP consist of people that typically work together, in the case of CBNRM Net members as a rule do not work together and certainly do not know each other. All member will, however work on the same or similar issues as some of the other members.

What makes this networking possible is of course ICTs, in this case the Internet and email. The Web site is open to anybody, while the Newsletter is sent out only to members. A survey, complemented with discussions with several members over the years, have made it clear that communicating with members via the Web site represents problems. Most importantly, a majority of the members that live in developing countries and countries in transition cannot access the Web site. For this reason recently the relative emphasis on communicating with the members via the Newsletter has become much more important.

Knowledge management for CBNRM Net is facilitated by use of ICTs. And the knowledge that is being managed covers all aspects of CBNRM, from information about conferences and training, to new publications, to new projects, to case studies. Members volunteer such data, for posting on the Web site and in the Newsletter. This aspect of the knowledge management amounts to dissemination but goes beyond dissemination to cover actual production of new knowledge.

While CBNRM Net in itself is an experiment in how to create a global virtual CoP, CBNRM Net's approach to use of ICTs is also an experiment. While some argue the case of the endless possibilities represented by ICTs, CBNRM Net argues a more low-key approach: ICTs represent possibilities but also limitations (Soeftestad and Kashwan In Press). Clearly, the fact of the very large differences between many members, partly in terms of hard- and software configuration as well as Internet connection, and partly in terms of background, training and needs, makes it difficult if not impossible to devise a communication strategy that suits all members.

## DISCUSSION

As discussed above, in the Caribbean there appears to be few old and well-developed institutions that are relevant in connection with coastal and marine management. In Bangladesh there are a number of such institutions at the local level. However, the combined effect of a lacking ability to collaborate across a number of cultural and social disjunctures together with a lacking public sector and government presence that could provide support, amounts to a fragmented nature of local social organization and institutional potential. The situation in Ghana is characterized by a strong traditional culture with key institutions that

used to be of crucial importance, but which has not sought, or managed to, build bridges to the modernizing and devolving nation-state, and accordingly have become largely marginalized.

In the Caribbean quest to develop suitable institutions in selected areas and locations of coastal and marine management, the situations in Bangladesh and Ghana can be instructive. Contrary to the situation in Bangladesh, local institutions must be designed to be closely connected with the nation-state macro-level, that is, avoiding horizontal layering. Contrary to the situation in Ghana, the design of institutions must ensure that vertical layering between different population categories does not take place.

Recognizing that institutions are deemed crucial for successful co-management, it becomes interesting to understand why, in spite of the not-well developed situation with regards to institutions, co-management in the Caribbean is relatively successful. The explanation likely lies in the presence of specific characteristics of – and synergies between – other variables. Furthermore, the design of institutions will benefit from taking place in a broad context of knowledge management, and will, in turn, contribute to empowering the local communities in question. Empowerment, consisting of access to information, inclusion and participation, accountability and local organizational capacity (World Bank 2003), is an important element in the overall causality chain (Figure 1). This can be depicted, as a flow chart, in Figure 3. Utilization of the comparative project matrix can contribute to understanding how to conceive of the necessary institutions to be built.

Placing co-management in the context of knowledge management leads to changes. The context becomes bigger in terms of emphasis, number of stakeholders and emphasis. The key factor that drives this is the move from a focus on information to a focus on knowledge. How to employ knowledge management in the case of managing coastal and marine resources in the Caribbean, on the local level as well as on the regional level? There are two key causally connected considerations to be made: First, start from the bottom, with the users and practitioners. It has to build up gradually, at several locations and levels that gradually are becoming integrated and networked. This approach will complement top-down approaches, like for example FAO's Fisheries Management Knowledge Exchange System (FMKES) (FAO 2003). Second, network knowledge. Understand projects as processes and networks as adaptive. On both accounts CBNRM Net would be interested in contributing to realizing the goals that is set.

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